

B: Amendments to The Claims:Amend the claims to read as follows:

1     Claim 1. (Concurrently Amended) A multiprocessor computer  
2     system comprising,  
3                 a cache coherent symmetric (SMP) computer system of  
4         symmetric multiple processors having a plurality of  
5     processing nodes and caches and a node controller which use  
6     processor state information according to mappings provided  
7     by supervisor software or firmware of allowable physical  
8     processors to an application workload to determine which  
9     coherent cache regions in the system are required to examine  
10    a coherency transaction produced by a storage request of a  
11    single originating processor of said computer system and to  
12    change coherency boundaries directly with coherency mode  
13    bits processor's storage request.

1     Claim 2. (Concurrently Amended) The multiprocessor computer  
2     system according to claim 1 wherein a node of said plurality  
3         of processing nodes of the computer has dynamic coherency  
4     boundaries such that the hardware of said computer system  
5     uses only a subset of the total processors in the said  
6     computer system for a single workload at any specific point  
7     in time and optimizes the cache coherency as the supervisor  
8     software or firmware expands and contracts the number of  
9     processors which are being used to run any single workload.

1     Claim 3. (Concurrently Amended) The multiprocessor computer  
2     system according to claim 1 wherein multiple instances of a  
3         physical node are connected with a second level controller  
4     to create a large multiprocessor system having multiple node  
5         controllers.

1 Claim 4. (Original) The multiprocessor computer system  
2 according to claim 1 wherein said node controller uses mode  
3 bits to determine which processors must receive any given  
4 transaction that is received by the node controller.

1 Claim 5. (Concurrently Amended) The multiprocessor computer  
2 system according to claim 1 wherein a second level  
3 controller is provided which uses ~~the~~ mode bits to determine  
4 which nodes must receive any given transaction that is  
5 received by the second level controller.

1 Claim 6. (Concurrently Amended) The multiprocessor computer  
2 system according to claim 1 wherein logical partitions are  
3 provided and mapping of said logical partitions to allowable  
4 physical processors is provided by ~~provided by~~ supervisor  
5 software or firmware of allowable physical processors to an  
6 application workload.

1 Claim 7. (Concurrently Amended) The multiprocessor computer  
2 system according to claim 1 wherein logical partitions are  
3 provided for the supervisor software or firmware which maps  
4 allowable physical processors to an application workload and  
5 a hypervisor assigns cache coherence regions which encompass  
6 subsets of ~~the total number of~~ processors and caches in  
7 the system chosen for their physical proximity and defines a  
8 distinct cache coherency region for each of said logical  
9 partitions partition.

1 Claim 8. (Concurrently Amended) (Concurrently Amended) The  
2 multiprocessor computer system according to claim 1 wherein  
3 a single workload uses only a subset of the total processors  
4 in the computer system for a single workload at any specific  
5 point in time for an assigned partition and a distinct cache  
6 coherency ~~is optimized~~ for the address space of the assigned  
7 partition as the supervisor software or firmware expands and

8 contracts the number of processors which are being used to  
9 run any single workload in said assigned partition.

1 Claim 9. (Concurrently Amended) The multiprocessor computer  
2 system according to claim 1 wherein a single workload uses  
3 only a subset of the total processors in the computer system  
4 for a single workload at any specific point in time, and  
5 multiple cache coherent regions are assigned for different  
6 partitions as more independent workloads coexist on ~~the same~~  
7 said hardware.

1 Claim 10. (Concurrently Amended) The multiprocessor computer  
2 system according to claim 1 wherein cache coherence regions  
3 encompass subsets of ~~the total number of~~ processors and  
4 caches in the computer system and a single workload uses  
5 only a subset of the total processors in the computer system  
6 for a single workload at any specific point in time for an  
7 assigned partition and a distinct cache coherency ~~is~~  
8 ~~optimized~~ for the address space of the assigned partition as  
9 the supervisor software or firmware expands and contracts  
10 the number of processors which are being used to run any  
11 single workload in said assigned partition.

1 Claim 11. (Concurrently Amended) The multiprocessor computer  
2 system according to claim 1 wherein software and/or firmware  
3 define which subset of processors in ~~a large~~ said  
4 multiprocessor must participate in a coherency transaction  
5 independent of which processing node is connected to ~~the~~  
6 physical DRAM storage being requested by said single  
7 originating processor.

1 Claim 12. (Concurrently Amended) The multiprocessor computer  
2 system according to claim 11 wherein the movement of a  
3 process between nodes of ~~a large~~ said symmetric multiple  
4 processors of said multiprocessor is effectuated without

5 moving physical storage contents and without requiring  
6 subsequent broadcasting of the storage references originated  
7 by the process from said single originating processor's  
8 storage request to all of the caches in the multiprocessor.

1 Claim 13. (Currently Amended) The multiprocessor computer  
2 system according to claim 1 wherein cache coherence mode  
3 bits are appended to a processor's storage transactions when  
4 transmitted to a connected processor of said multiprocessor  
5 computer system.

1 Claim 14. (Original) The multiprocessor computer system  
2 according to claim 13 wherein said cache coherence mode bits  
3 are used in a decision determining whether the single  
4 originating processor's storage request must be transmitted  
5 to additional processors in the system.

1 Claim 15. (Concurrently Amended) The multiprocessor computer  
2 system according to claim 14 wherein an increase in the  
3 effective utilization of the address bandwidth of the buses  
4 used to interconnect the processors of a multiprocessor  
5 system allows movement of workload among physical processors  
6 in a multiprocessor system at the same time as a reduction  
7 of the address bandwidth required to maintain cache  
8 coherency among all the processors is caused.

Claim 16. (New) The multiprocessor computer system according  
to claim 1 wherein a control program for the dispatch of  
virtual processors for controlling the size and extent of a  
required coherency domain changes said coherency boundaries  
directly with coherency mode bits.